

OTHER DISPOSALS

BURIAL TRENCH IN THE VICINITY OF THE EAST AND WEST WAREHOUSES

This solid waste management unit (SWMU) was used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). Accordingly, Olin cannot attest to the accuracy or the completeness of information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that possibly 30-100 lb. drums of aluminum chloride and 7 drums of Kempore (azodicarbonamide) may have been disposed in this unit.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

DRUMS NORTH OF LAGOON II

This solid waste management unit (burial trench) was used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). Accordingly, Olin cannot attest to the accuracy or the completeness of information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that possibly drums of Opex 93 (dinitrosopentamethylenetetramine) and Kempore (azodicarbonamide) may have been disposed of in this unit.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

OPEX VICINITY OF LAGOON I

This solid waste management unit (SWMU) was used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). Accordingly, Olin cannot attest to the accuracy or the completeness of the information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that possibly Opex (dinitrosopentamethylenetetramine) material may have been disposed of in this area.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

OPEX DRUMS WEST OF WEST WAREHOUSE

This solid waste management unit (burial trench) was used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). Accordingly, Olin cannot attest to the accuracy or the completeness of the information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that possibly 100 drums of Opex (dinitrosopentamethylenetetramine) may have been disposed of in this unit.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

SEPTIC TANKS

QUESTION 1:

SWMU: Septic Tank (Three active: 1) west of pilot plant, 2) south of boiler house, 3) between east and west warehouses

b) Type of Unit: Septic Tank

Dimensions: 1) 9 ft. x 6 ft. x ? plus drain field - see attached drawing
2) Unknown
3) Unknown

Information on how unit was designed, constructed, operated and maintained:
Unknown - see attached Drawing A for Unit 1.

c) Date in use: Unknown to present

d) Quantity and Type(s) of wastes managed in unit: Sanitary

e) Releases of hazardous wastes or hazardous constituents: None to the best of our knowledge

f) Information, data and documentation concerning any releases: None

g) Corrective actions: None required

For more detailed information pertaining to the design, construction, operation, maintenance or regarding any possible releases prior to Olin's acquisition on September 15, 1980, please contact Stepan Chemical Company, Inc., Edens and Winnetka Roads, Winnetka, Illinois 60093-0000, (312) 446-7500.

INACTIVE SEPTIC TANKS

TILE FIELD SOUTH OF PLANT A, TILE FIELD EAST OF PLANT B

These solid waste management units (Septic Tanks) were used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). The attached drawings contain information pertaining to these units. They were prepared prior to Olin's acquisition of the property and extracted from those files/records retained at the facility. Accordingly, Olin cannot attest to the accuracy or the completeness of the information pertaining to the operation or design of these units. The volume and composition of material discharged to these two as well as other "septic type fields" that have been uncovered during plant construction excavations is unknown.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

REMEDIAL ACTIONS
GROUNDWATER STUDIES
FIELD INVESTIGATION

PCB CAPACITOR FIRE

QUESTION 2:

Other units that hold or have held hazardous substances and from which there have been releases of hazardous constituents: PCB capacitor

b) Type of unit: Electrical Capacitor

Dimensions: Unknown

c) Dates in use: 01/01/65-8/24/85

d) Quantity and types of hazardous substances managed in unit: 16.4 kilograms of PCB;s

e) Dates, quantity and types of any known releases: August 24, 1985 capacitor ruptured and spilled material also minor fire erupted

f) Information, data, documentation concerning any releases: Analysis of spill area after cleanup is attached

g) Corrective actions (completed or underway): Capacitor removed and sent offsite for disposal. Emergency contractor (Clean Harbors, Inc.) performed cleanup of area and material immediately after failure. DEQE and NRC notified. Fire Department and MA DEQE responded.

PLANT B TANK FARM AND VICINITY

QUESTION 2:

Other units that hold or have held hazardous substances and from which there have been releases of hazardous constituents: Plant B Production Area and Tank Farm

- b) Type of unit: Six carbon steel, 15,000-gallon. Concrete dike installed in 1981. Other smaller tank(s) may have been utilized for processing/storage in this area

Dimensions: Dike for 6 15,000-gallon tanks approximately 26 ft. x 35 ft. x 1.5 ft.

- c) Dates in use: Unknown-Current
- d) Quantity and types of hazardous substances managed in unit: Unknown
- e) Dates, quantity and types of any known releases: Undocumented reports of releases in 50's and 60's of diisobutylene, diphenylamine, dioctylphthalate, dioctyldiphenylamine. Believed to be source of seep along east side of plant.
- f) Information, data, documentation concerning any releases: None
- g) Corrective actions (completed or underway): Interceptor well system was installed in 1982 and located to east of tank farm by small drainage ditch. Consists of 4 pumping wells of 1-2 gpm each, separation tank, skimmer for nonaqueous phase liquids and carbon treatment of water phase prior to in-plant usage. Interceptor well system described under Question 1, SWMU.

APPENDIX C

AMMONIUM HYDROXIDE TANKS

QUESTION 1:

SWMU: Ammonium Hydroxide Tanks

b) Type of Unit: Storage Tanks

Dimensions: 15,000/15,100/8,000/10,000-gallon, all carbon steel, all diked

Information on how unit was designed, constructed, operated and maintained:

- 1) 15,000 gallon - Plant B tank farm, diked
- 2) 15,100 gallon - West of Plant C-3, out-of-service and removed
- 3) 8,000 gallon - Plant D tank farm, diked
- 4) 10,000 gallon - Treatment plant, diked

c) Date in use: 1) 1983 to present
2) Unknown to 12/83
3) 2/84 to 7/86
4) 9/82 to present

d) Quantity and Type(s) of wastes managed in unit: Ammonium hydroxide from Kempore process stored prior to being neutralized and discharged to POTW.

e) Releases of hazardous wastes or hazardous constituents: None known

f) Information, data and documentation concerning any releases: None

g) Corrective actions: None required

WASTEWATER TREATMENT SYSTEM

QUESTION 1:

SWMU: Wastewater Treatment Plant

b) Type of Unit: Treatment/Neutralization/Settling

Dimensions: System utilized 7 tanks, 1 sump and 2 settling ponds to treat process wastewater prior to discharge to POTW

Information on how unit was designed, constructed, operated and maintained: Acid stream is treated with lime and sent to one of two lagoons to allow settling of calcium sulfate sludge. Supernatant returned to clarifier and discharged to POTW. Other process streams are neutralized using HCl or ammonium hydroxide, then sent to the clarifier and discharged to POTW.

c) Date in use: 1971-current

d) Quantity and Type(s) of wastes managed in unit: Average flow 250,000 gpd, typical composition sulfates 800-1200 ppm, chlorides 350-3500, trace organics, low levels zinc, copper, cyanide. Note: Plant ceased chemical processing July 1, 1986.

e) Releases of hazardous wastes or hazardous constituents: None known, discharge to POTW.

f) Information, data and documentation concerning any releases: Unknown

g) Corrective actions: None required

QUESTION 1:

SWMU: Lagoons I and II

b) Type of Unit: Settling Pond

Dimensions: I) 195 ft. x 195 ft. x 11 ft.
II) Top 245 x 130 x 10 ft.

Information on how unit was designed, constructed, operated and maintained: Originally lined with a PVC liner in 1972. Lagoon was relined in 1981 and built to the dimensions listed above. The pond was constructed on a 1 foot layer of compacted sand, lined with a 36 mil Hypalon® liner, covered with 1 foot of compacted sandy-clay and this in turn was covered by 1 foot of 3/4" to 1½" processed gravel. Acidic (sulfuric) wastewater was lime neutralized in the treatment plant tank and discharged to lagoon for settling of calcium sulfate sludge. Supernatant was returned to the clarifier for discharge to the POTW.

c) Date in use: First put in service 1972-73

d) Quantity and Type(s) of wastes managed in unit: When Kempore process running sulfuric acid wastewater (0.05 mgd) from azodicarbonamide process treated with lime (0.02 mgd) and discharged into lagoon.

e) Releases of hazardous wastes or hazardous constituents: There have been no known releases of hazardous waste or hazardous constituents from this unit (for additional information see below).

f) Information, data and documentation concerning any releases: A four-season hydrogeologic study (see attached Hydrogeologic Investigation, Malcolm Pirnie, Inc., Appendix C) of the groundwater and the surface waters was conducted at the Wilmington plant site during 1981. The results of the study indicated that the lagoons were believed to be leaking and were potential sources of inorganic chemicals.

g) Corrective actions: Lagoons were relined in 1981 and 1983, respectively.

For more detailed information pertaining to the design, construction, operation, maintenance or regarding any possible releases prior to Olin's acquisition on September 15, 1980, please contact Stepan Chemical Company, Inc., Edens and Winnetka Roads, Winnetka, Illinois 60093-0000, (312) 446-7500.

PLANT B PIT

QUESTION 1:

SWMU: Plant B Pit

b) Type of Unit: Settling Tank

Dimensions: 7 ft. x 14 ft. x 11.5 ft.

Information on how unit was designed, constructed, operated and maintained:
Covered concrete tank. Bottom and top 8" thick and walls 10" thick.

- c) Date in use: Actual dates put in service and process utilization unknown. Existence discovered after Olin acquisition. Contents cleaned out and disposed of offsite in March 1986.
- d) Quantity and Type(s) of wastes managed in unit: See attached analysis of disposal contents
- e) Releases of hazardous wastes or hazardous constituents: Unknown
- f) Information, data and documentation concerning any releases: Unknown
- g) Corrective actions: Contents removed and tank filled with concrete

For more detailed information pertaining to the design, construction, operation, maintenance or regarding any possible releases prior to Olin's acquisition on September 15, 1980, please contact Stepan Chemical Company, Inc., Edens and Winnetka Roads, Winnetka, Illinois 60093-0000, (312) 446-7500.

Plant 3 fit

E.C. JORDAN CO.

CONSULTING ENGINEERS
562 CONGRESS STREET P.O. BOX 7050 • PORTLAND, MAINE 04112
(207) 775-5401 TELEX. 94-4329

REPORT OF ANALYSIS
REFERENCE NUMBER

434

DATE 8/22/83
PAGE 1

OLIN CHEMICAL
ATTN: JIM MARTUCCI
51 EAMES STREET
WILMINGTON MA 01887

CLIENT LAB ID	DATE RECEIVED /	PARAMETER	UNITS	RESULTS
BOTTOM	7/01/83			
3182020		PH (LABORATORY)		5.1
		PHENOLICS, TOTAL RECOVERABLE	MG/KG	680
		SEMI-VOLATILE BASE/NEUTRALS		
		N-NITROSODIPHENYLAMINE	MG/KG	4300
		BIS(2-ETHYLHEXYL)PHTHALATE	MG/KG	360000
		EP EXTRACTION-ARSENIC	MG/L	0.007
		EP EXTRACTION-BARIUM	MG/L	0.36
		EP EXTRACTION-CADMIUM	MG/L	0.026
		EP EXTRACTION-CHROMIUM	MG/L	0.025
		EP EXTRACTION-LEAD	MG/L	0.073
		EP EXTRACTION-MERCURY	UG/L	< 1
		EP EXTRACTION-SELENIUM	MG/L	< 0.005
		EP EXTRACTION-SILVER	MG/L	< 0.001
		FLASH POINT	DEGREES F	> 200
		BRITISH THERMAL UNITS	6A LBS	9580
TOP	7/01/83			
3182021		PH (LABORATORY)		5.2
		PHENOLICS, TOTAL RECOVERABLE	MG/KG	110
		SEMI-VOLATILE BASE/NEUTRALS		
		N-NITROSODIPHENYLAMINE	MG/KG	2000
		BIS(2-ETHYLHEXYL)PHTHALATE	MG/KG	100000
		EP EXTRACTION-ARSENIC	MG/L	0.005
		EP EXTRACTION-BARIUM	MG/L	0.17
		EP EXTRACTION-CADMIUM	MG/L	0.004
		EP EXTRACTION-CHROMIUM	MG/L	0.026
		EP EXTRACTION-LEAD	MG/L	0.008
		EP EXTRACTION-MERCURY	MG/L	< 1
		EP EXTRACTION-SELENIUM	MG/L	< 0.005
		EP EXTRACTION-SILVER	MG/L	< 0.001
		FLASH POINT	DEGREES F	> 200
		BRITISH THERMAL UNITS	6A LBS	3920

SIGNATURE

William J. Karp

REPORT TO ROBERT M BURGER
AUTHORIZATION 420700

ORIGINAL

CALCIUM SULFATE LANDFILL

QUESTION 1:

SWMU: Calcium Sulfate Landfill

b) Type of Unit: Landfill

Dimensions:

Information on how unit was designed, constructed, operated and maintained:
See attached plan for most recent utilization (1985) and design.

c) Date in use: January 1975-1986

d) Quantity and Type(s) of wastes managed in unit: Calcium sulfate sludge and water from Lagoon I and II cleanouts. See attached for EP extract analyses. Estimate volume since 1975 75,000 cubic yards.

e) Releases of hazardous wastes or hazardous constituents: There have been no known releases of hazardous wastes or hazardous constituents from this unit

f) Information, data and documentation concerning any releases: Unknown

g) Corrective actions: Unknown

For more detailed information pertaining to the design, construction, operation, maintenance or regarding any possible releases prior to Olin's acquisition on September 15, 1980, please contact Stepan Chemical Company, Inc., Edens and Winnetka Roads, Winnetka, Illinois 60093-0000, (312) 446-7500.

Stepan chemicals - Special Leachates

Sludge is non-hazardous

SLUDGE TYPE EPA limit	RUN(R) AND COMPOSITE(C) NUMBER	DATE SAMPLE COLLECTED	INITIAL SLUDGE PPM Hg	TRACE METALS IN LEACHATE - PPM												
				Hg 2	Ag 5	Ba 100	As 5	Cu -	Ni -	Pb 5	Cr 5	Tl -	Zn -	Se 1	Cd 1	Sb -
Special leachate	R1-C1	5.5.80	.0587	.0007	.001	1.25	<.02				.3	.019			<.02	.03
"	R2-C1	"	.069 ^{Reanalyzed}	.0007 .003	.001	1.25	<.02				.15	.013				
"	R3-C1	"	5.27 ^{Reanalyzed}	.001 .003	.001	1.0	<.02				.225	.038			<.02	.023
"	R4-C1	"	.0502 ^{Reanalyzed}	.0002 .003	.001	1.0	<.02				.09	.031			<.02	.038
															<.02	.035
PESTICIDES - IN LEACHATE - PPM																
EPA Limit			ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE	2,4,D	2,4,5-TP	SILVEX							
			.02	.4	10	.5	10	1.0								
Special leachate	R1-C1	"	<.0001	<.0001	<.0001		<.0004	<.01	<.0005							
"	R2-C1	"	<.0001	<.0001	<.0001		<.0004	<.01	<.0005							
"	R3-C1	"	<.0001	<.0001	<.0001		<.0004	<.01	<.0005							
"	R4-C1	"	<.0001	<.0001	<.0001		<.0004	<.01	<.0005							

INTERCEPTOR WELL SYSTEM

QUESTION 1:

SWMU: Interceptor Well System

- b) Type of Unit: Groundwater interception, storage and treatment

Dimension: Four wells approximately 20 ft. deep pumping 1-2 gpm each to 15,000-gallon separation tank and skimmer, water carbon treated prior to in-plant usage.

Information on how unit was designed, constructed, operated and maintained:
See attached reports

- c) Date in use: 1981 to present

- d) Quantity and Type(s) of wastes managed in unit: Water contains approximately 1-2 mg/l Bis(2-ethylhexyl)phthalate and 1-2 mg/l N-Nitrosodiphenylamine. Other trace organics including diisobutylene and di-n-octylphthalate may be present.

- e) Releases of hazardous wastes or hazardous constituents: None known

- f) Information, data and documentation concerning any releases: None

- g) Corrective actions: System was installed as a corrective action for seep along east side of property believed to have emanated from Plant B tank farm and vicinity.

LAKE POLY
AND
ACID PITS

LAKE POLY

This solid waste management unit (SWMU) was used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). The attached report contains information pertaining to this unit. It was prepared prior to Olin's acquisition of the property and extracted from those files/records retained at the facility. Accordingly, Olin cannot attest to the accuracy or the completeness of the information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that most of the plant's process wastewaters were discharged through this SWMU.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

ACID PITS

These three solid waste management units (SWMU) were used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). The attached report contains information pertaining to these units. It was prepared prior to Olin's acquisition of the property and extracted from those files/records retained at the facility. Accordingly, Olin cannot attest to the accuracy or the completeness of the information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that most of the plant's process wastewaters were discharged to these units.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.